

## International Medicine

<https://www.theinternationalmedicine.com>



### Original Research

# Evaluate Outcome of Labour Induction in Women with Oligohydramnios

Annu Murali M<sup>1</sup>, Bhanumathi Vasudeva<sup>1</sup>, Sharadha Govindaraju<sup>2</sup>, Syeda Maisarah Imam<sup>1</sup>, Tejaswini K K<sup>3</sup>

<sup>1</sup>Junior Resident, Department of Obstetrics and Gynaecology, Bangalore Medical College and Research Institute 562123

<sup>2</sup>Assistant Professor, Department of Obstetrics and Gynaecology, BGS Medical College and Hospital, Nagarur, Bengaluru 562123

<sup>3</sup>Assistant Professor, Department of Obstetrics and Gynaecology, Bangalore Medical College and Research Institute, Bengaluru 560002.

Received - 16/07/2025 | Reviewed - 28/07/2025 | Accepted - 18/08/2025 | Published - 04/09/2025

### Abstract

Oligohydramnios, defined as an amniotic fluid index (AFI)  $\leq 5$  cm or a single deepest vertical pocket  $< 2$  cm, is a significant antenatal condition linked with adverse maternal and perinatal outcomes. The disorder complicates approximately 1-5% of term pregnancies and rises to more than 12% in post-term pregnancies. Despite its association with increased risk of cesarean delivery, low Apgar scores, meconium aspiration syndrome, and neonatal intensive care unit (NICU) admissions, management strategies remain debated. This study aims to evaluate outcomes of labour induction in women with oligohydramnios at term, comparing maternal and neonatal outcomes with those of women having normal amniotic fluid volume. A retrospective case-control design will be employed at Vanivilas Hospital, BMCRI, Bangalore. Primary outcomes include mode of delivery and neonatal morbidity. Findings from this study are expected to provide clarity regarding the safety and efficacy of induction in oligohydramnios and guide obstetric decision-making.

**Keywords:** Oligohydramnios, labour induction, neonatal morbidity, cesarean delivery, retrospective study.

### Introduction

Amniotic fluid plays a vital role in pregnancy, facilitating fetal growth, protecting against trauma, preventing cord compression, and aiding in lung and musculoskeletal development. Oligohydramnios, characterized by decreased amniotic fluid volume for gestational age, often arises due to ruptured membranes, congenital anomalies, placental insufficiency, or idiopathic factors. It is associated with increased maternal interventions and poor perinatal outcomes.

Meta-analyses highlight increased cesarean and operative delivery rates in oligohydramnios but remain inconclusive about neonatal morbidity, necessitating further research in specific populations.

The management of oligohydramnios at term continues to generate debate. Some advocate for immediate induction to prevent stillbirth, while others suggest that induction increases cesarean delivery without significant perinatal benefit. This paper evaluates the impact of labour induction in oligohydramnios cases on maternal and neonatal outcomes in a South Indian tertiary care setting.

### Objectives

- To evaluate the maternal outcomes of labour induction in oligohydramnios at term (mode of delivery, induction-delivery interval, cesarean indications).
- To assess neonatal outcomes (5-minute Apgar scores, NICU admissions) following induction.
- To compare these outcomes with those of women having normal amniotic fluid volume.

Address for Correspondence: Dr Syeda Maisarah Imam, Junior Resident, Department of Obstetrics and Gynaecology, Bangalore Medical College and Research Institute 562123

DOI: 10.5455/im.5689784

This is an Open Access article under the terms of the Creative Commons Attribution-Noncommercial 4.0 International License (<https://creativecommons.org/licenses/by-nc/4.0/>)

### Material and Method

**Study Design:** Retrospective case-control study.

**Setting:** Vani Vilas Hospital, BMCRI, Bangalore.

**Study Period:** September-November 2022.

**Sample Size:** 32 in each group (cases: oligohydramnios; controls: normal AFI).

**Inclusion Criteria:** Nulliparous women, singleton pregnancies, cephalic presentation, term (37-41 weeks), intact membranes, Bishop score  $< 5$ , no comorbidities.

**Exclusion Criteria:** Preterm/post-term pregnancies, prior uterine surgery, contraindications to vaginal delivery, BMI  $> 35$  kg/m<sup>2</sup>, hypersensitivity to prostaglandins.

**Induction Protocol:** Intracervical PGE2 gel (0.5 mg), reassessment every 6 hours, repeat dose if Bishop score  $< 5$ , augmentation with oxytocin if contractions inadequate.

**Outcomes Measured:**

- Primary: Mode of delivery, induction-delivery interval, indication for LSCS.
- Secondary: Neonatal outcomes (5-min Apgar, NICU admission)

Statistical Analysis: SPSS v22.0, Chi-square test, independent t-test/Mann-Whitney U test, significance at  $p < 0.05$ .

The study analyzed outcomes of labour induction among women with oligohydramnios (AFI  $\leq 5$  cm) and those with normal amniotic fluid volume. The findings are summarized below:

- Cesarean Section Rate: 37% in AFI  $\leq 5$  group and 38% in the control group; the difference was not statistically significant.
- Induction-Vaginal Delivery Interval: 13 hours in AFI  $\leq 5$  group versus 15 hours in the control group; significantly shorter in oligohydramnios cases.
- Induction-Cesarean Delivery Interval: 21 hours in AFI  $\leq 5$  group versus 22 hours in the control group; no significant difference.
- Indication for LSCS: The most common indication in both groups was failed induction.
- NICU Admissions: 40% in AFI  $\leq 5$  group and 30% in the control group; the difference was statistically significant ( $p = 0.003$ ).
- 5th-Minute Apgar Score: No statistically significant difference between the groups.

**RESULT**

A total of 64 women were included in the study, with 32 in the oligohydramnios group (AFI  $\leq 5$  cm) and 32 in the control group (normal AFI). The baseline demographic and obstetric characteristics were comparable between the groups.

Mode of Delivery:

- Cesarean section rate was 37% in the oligohydramnios group and 38% in the control group, with no statistically significant difference.

Induction-Delivery Interval:

- Induction to vaginal delivery interval was significantly shorter in the oligohydramnios group (13 hours) compared to controls (15 hours).

- Induction to cesarean delivery interval was similar between the two groups (21 hours vs. 22 hours).

Indications for LSCS:

- The most common indication in both groups was failed induction, followed by non-reassuring fetal heart rate patterns.

Neonatal Outcomes:

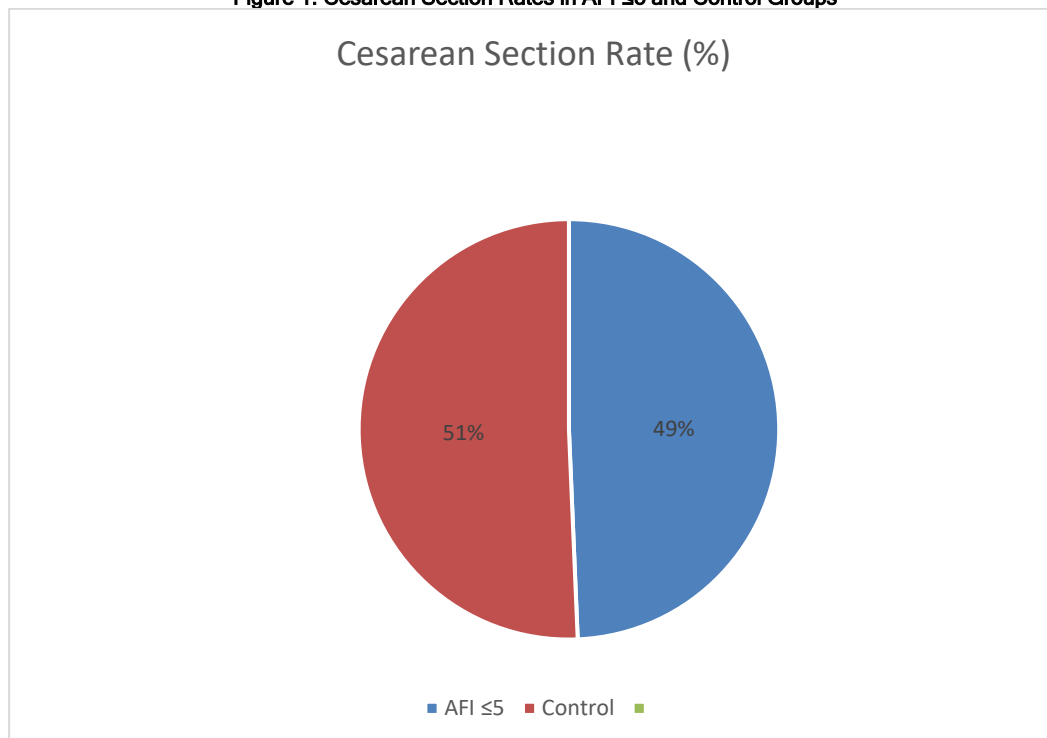
- NICU admissions were significantly higher among neonates born to mothers with oligohydramnios (40%) compared to controls (30%) ( $p = 0.003$ ).

- The 5th-minute Apgar score showed no statistically significant difference between the two groups.

**Table 1: Maternal and Neonatal Outcomes**

| Outcome                           | AFI $\leq 5$ Group | Control Group | p-value  |
|-----------------------------------|--------------------|---------------|----------|
| Cesarean Section Rate             | 37%                | 38%           | NS       |
| Induction-Vaginal Delivery (hrs)  | 13                 | 15            | $< 0.05$ |
| Induction-Cesarean Delivery (hrs) | 21                 | 22            | NS       |
| NICU Admissions                   | 40%                | 30%           | 0.003    |
| 5-min Apgar $< 7$                 | No difference      | No difference | NS       |

**Figure 1: Cesarean Section Rates in AFI  $\leq 5$  and Control Groups**



**Figure 2: Vaginal Delivery Rates in AFI  $\leq 5$  and Control Groups**

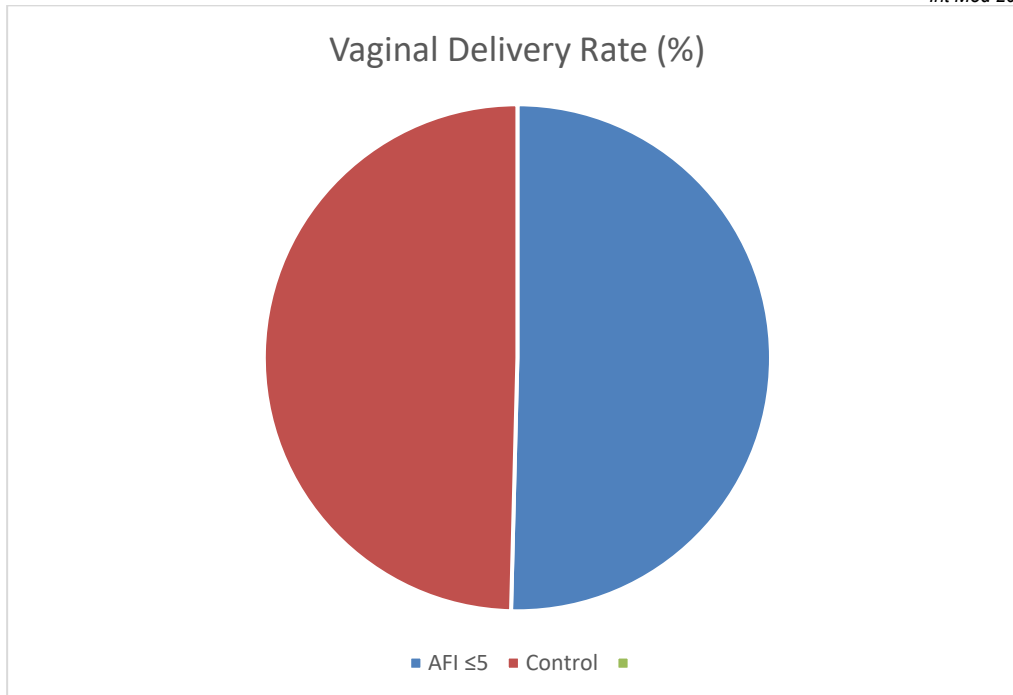
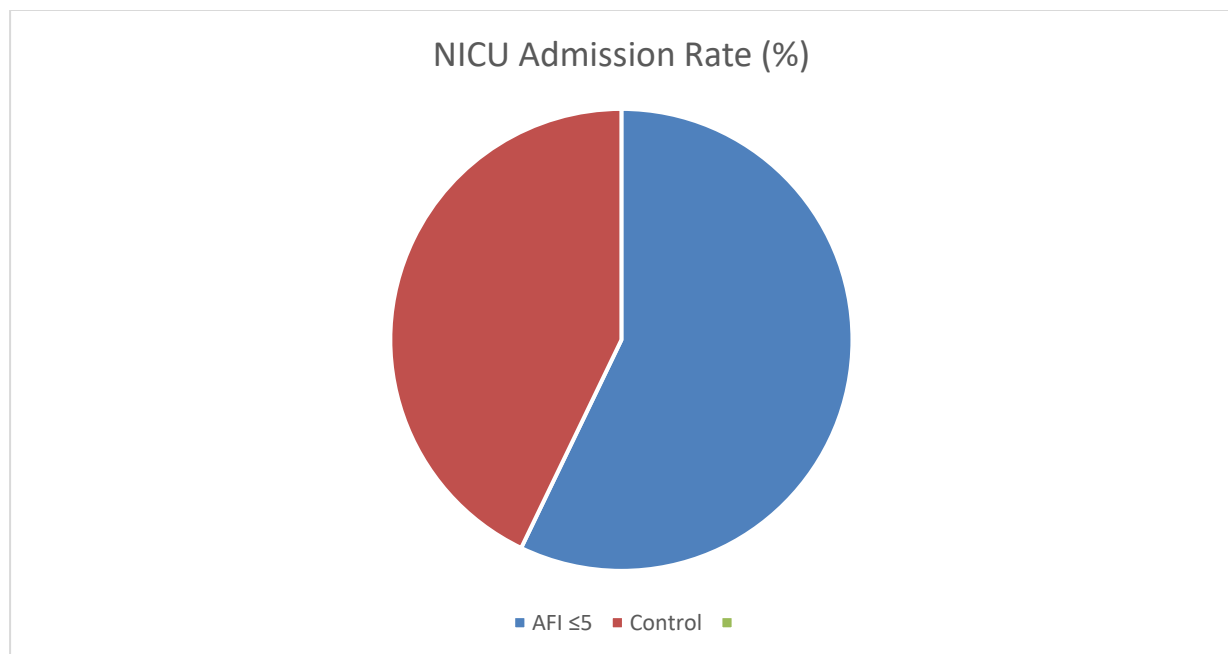


Figure 3: NICU Admission Rates in AFI ≤5 and Control Groups



## DISCUSSION

Oligohydramnios poses a clinical challenge due to its association with increased obstetric interventions. In this study, however, the cesarean section rates between oligohydramnios (37%) and control groups (38%) were comparable, suggesting that oligohydramnios itself may not directly increase the likelihood of cesarean delivery. Interestingly, the induction-vaginal delivery interval was shorter in the oligohydramnios group, possibly reflecting heightened vigilance and proactive management. NICU admissions were significantly higher in the oligohydramnios group (40% vs 30%), highlighting an increased risk of immediate neonatal morbidity. Nevertheless, the 5th-minute Apgar scores did not differ significantly between the groups, indicating that most neonates adapted well post-delivery.

These findings suggest that while oligohydramnios at term does not necessarily increase operative delivery rates, it is associated with increased neonatal intensive care needs. Thus, individualized management remains essential, with particular emphasis on neonatal monitoring and preparedness for NICU admission.

## Conclusion

Labour induction in women with oligohydramnios at term showed similar cesarean rates compared with controls. However, these women had a shorter induction-to-vaginal delivery interval and significantly higher NICU admission rates, although 5th-minute Apgar scores were not different. These results suggest that oligohydramnios may not increase the risk of cesarean delivery but does predispose neonates to greater immediate morbidity. Therefore, induction remains a safe option, provided neonatal intensive care facilities are available and close monitoring is ensured.

**References**

1. Crowley P, O' Herlily C, Boylan P. The value of Ultrasound measurement of amniotic fluid volume in the management of prolonged pregnancies. *Br J Obstet Gynaecol.* 1984;91(5):444-8.
2. Phelan JP, Ahn MO, Smith CV, Rutherford SE, Anderson E. Amniotic fluid index measurements during pregnancy. *J Reprod Med.* 1987;32(8):601-4.
3. Kansu-Celik H, Gun-Eryilmaz O, Dogan NU, et al. Prostaglandin E2 Induction of Labor and Cervical Ripening for Term Isolated Oligohydramnios in Pregnant Women with Bishop Score  $\leq 5$ . *J Chin Med Assoc.* 2017;80(3):169-72.
4. Venturini P, Contu G, Mazza V, Facchinetti F. Induction of Labor in Women with Oligohydramnios. *J Matern Fetal Neonatal Med.* 2005;17(2):129-32.
5. Zhang J, Troendle J, Meikle S, et al. Isolated oligohydramnios is not associated with adverse perinatal outcomes. *BJOG.* 2004;111:220-5.
6. Yenigul NN, Asicioglu O. The Effects of Isolated Oligohydramnios in Term Pregnancies on Labor, Delivery Mode, and Neonatal Outcomes. *Eurasian J Med Invest.* 2019;3(1):59-64.
7. Thomas JS, Denial M, Selviraj S. Fetomaternal Outcome Following Labour Induction in Oligohydramnios and Borderline Liquor: A Retrospective Study. *Int J Reprod Contracept Obstet Gynecol.* 2018;7(11):4615-8.